

714

Notice of Allowability

Application No.

10/562,292

Examiner

Khai M. Nguyen

Applicant(s)

BRIARE, JOSEPH

Art Unit

2819

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/31/2007.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

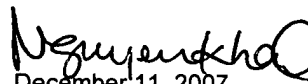
Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


December 11, 2007
Khai M. Nguyen
571-272-1809

DETAILED ACTION

1. Applicant's arguments, see page 7-8, filed October 31, 2007, with respect to claims 1-20 have been fully considered and are persuasive.
2. Drawings filed on December 22, 2005 are accepted.
3. Claims 1-20 are allowed. The following is an examiner's statement of reasons for allowance:

With respect to claim 1-13, the references of record neither reveal nor render obvious the recited combinations including the aspects of applying a digital signal occurring at substantially irregular intervals to the first switch and applying a second digital signal to the second switch causing the second switch to change state such that influences on the at least one of the common lines caused by the first and second switches switching occur at substantially regular intervals.

With respect claims 14-20, the references of record neither reveal nor render obvious the recited combination including the aspects of applying a first digital signal having a plurality of signal components each having a duration substantially equal to one or more clock cycles to the first switch, and applying a second digital signal to the second switch such that, during data conversion, during any one clock cycle either the first current source or the associated second current source is caused to switch.

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4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khai M. Nguyen whose telephone number is 571-272-1809. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



December 12, 2007
Khai M. Nguyen

A CURRENT STEERING D/A CONVERTER WITH REDUCED DYNAMIC NON-LINEARITIES

→ This application is a 371 of PCT/IB04/50997 filed 06/24/2004, which
 The invention relates to a digital to analog converter and a method of converting a digital signal to an analog signal. *Claims priority to EPO application 03101932.6 filed on 06/27/2003.*

5 A digital to analog converter converts digital signals to analog signals. Conventional digital to analog converters, for example as described in US-A-6 104 330, comprise a plurality of current sources connected to common power and bias lines. The sources are also connected to an output via a plurality of respective switches. The signal to be converted is applied to the switch. The analog output is constructed from a selectable number
 10 of the current sources in accordance with the digital signal received at each of the plurality of switches.

 A problem with such conventional digital to analog converters is achieving linearity. One type of error that contributes to non-linearity in digital to analog converters is that when a current source is switched on or off disturbances arise in the device. For example,
 15 in a conventional device having a selectable plurality of current sources, to increase the output signal (current), an additional number of sources must be switched on. However, because the sources are connected to common power and bias lines, they are not fully independent of one another. Thus, switching of one current source will influence the common lines, and thus the other sources connected to the common lines.

20 It has been found that this problem is proportional to the number of sources that need to be switched. For example, two switching sources will lead to a double disturbance compared to one switching source. This effect leads to internal dynamic non-linearities.

 A further problem with conventional digital to analog converters is that the
 25 timing of the switching of sources is influenced. For example, the switching of a source requires a certain amount of power at the moment of switching. If two sources are to switch at a particular moment, twice the power to switch is needed. However, in any system the amount of instantaneous power that is available is limited. Thus, the switching process becomes slower when more source switching operations are required. The switching delay of